wra
ENVIRONMENTAL CONSULTANTS

December 5, 2016

Department of the Army
Los Angeles District, U.S. Army Corps of Engineers
Attn: Shannon Pankratz
Regulatory Division, CESPL-RG
915 Wilshire Blvd., Suite 930
Los Angeles, CA 90017
Shannon.L.Pankratz@usace.army.mil

Re: Petersen Ranch Mitigation Bank Elizabeth Lake Area E As-built Report [USACE File No: SPL-2012-00669-BEM, CDFW Tracking No: 1600-2015-0075-R5]

Dear Interagency Review Team:

In compliance with sections VII.A.1,b, VII.B.1.b, VII.C.1.b, and VIII.D.2.a.2 of the Bank Enabling Instrument (BEI) for the Petersen Ranch Mitigation Bank, WRA, Inc. (WRA) respectfully submits this letter to serve as notification for the completion of the restoration activities on Elizabeth Lake Area E, a portion of the Petersen Ranch Mitigation Bank. Included in this letter are the as-built conditions for Elizabeth Lake Area E. Also included are a summary of activities that were conducted during the implementation phase. Photographs of the site prior to and immediately following the construction phase of implementation are also included in Attachment 1, as well as a map of these construction photopoints. Final construction drawings, including all earthwork, fencing, and seeding, are included in Attachment 2. Implementation required no deviations from the Petersen Ranch Development Plan (Development Plan) that resulted in a change to restored habitat or mitigation credits.

In order to complete the restoration activities in Area E, some work was also completed in Area F and is therefore described in this letter. However, no credits will be requested for Area F until that portion of the Development Plan is implemented and a conservation easement is recorded over Area F.

Crediting

Figures 1-4 show the acres of each mitigation type resulting from the restoration activities completed in Area E; this is the same mitigation as proposed in Development Plan. Table 1 summarizes the as-built acres of each mitigation type.

Table 1. Summary of Area E Mitigation

Mitigation Types	Acres
404 Mitigation Types	
Alluvial Floodplain Enhancement	0.60
Alluvial Floodplain Re-establishment	5.76
Alluvial Floodplain Rehabilitation	5.86
Alluvial Floodplain Riparian Buffer Enhancement	0.48
Alluvial Floodplain Riparian Buffer Re-establishment	46.21
Alluvial Floodplain Upland Buffer Enhancement	7.48
Alluvial Floodplain Upland Buffer Re-establishment	5.47
Ephemeral Stream Enhancement	0.14
Ephemeral Stream Riparian Buffer Enhancement	1.84
Ephemeral Stream Upland Buffer Enhancement	5.59
Freshwater Marsh Enhancement	0.10
Freshwater Marsh Upland Buffer Enhancement	0.28
Open Water Preservation	1.23
Open Water Riparian Buffer Enhancement	8.22
1600 Mitigation Types	
Alluvial Floodplain Enhancement	0.60
Alluvial Floodplain Re-Establishment	51.69
Alluvial Floodplain Rehabilitation	5.85
Ephemeral Stream Enhancement	0.49
Freshwater Marsh Enhancement	0.10
Open Water Preservation	1.23
Wetland Riparian Enhancement	5.25
Non-Wetland Riparian Enhancement	5.69
CESA Mitigation Types	
Swainson's Hawk Foraging Habitat Preservation	151.85
CEQA Mitigation Types	
Bare Ground	0.40
Chaparral	61.72
Great Basin Scrub	62.10
Open Water	1.23
Riparian Forest	13.55
Seeps, Meadows, Marshes	4.20
Valley and Foothill Grassland	13.22

Habitat Restoration and Enhancement Activities

The habitat restoration and enhancement activities occurred as outlined in Part VI of the Development Plan, with any deviations noted in this report. As described in the Development Plan, Area E activities included earthwork and seeding in the Munz Canyon Restoration Site (Restoration Site #1), and cattle exclusion from the northern part of Area E.

Earthwork and Road Decommissioning

To encourage natural hydrologic and geomorphological processes, the existing dam crest was lowered so that it is below grade of the upstream fan surface. Figure 5 shows before and after 3-D aerial imagery of the dam area, and construction drawings in Attachment 2 show final contours. Buried riprap was placed on the crest and downstream surface of the dam to provide permanent stabilization. The existing eroded outlet, located to the east of the dam was filled and stabilized to direct surface flows over the dam crest. The voids in the riprap placed on the dam were filled with topsoil and seeded as described below. Excess soil excavated at Munz Canyon was placed in upland stockpile areas described below. Finally, the main access road on the dam of Munz Canyon has been decommissioned and returned to native habitats.

Some earthwork in the Frakes Canyon Restoration Site (Restoration Site #2) also occurred, as described in Part VII of the Development Plan. The existing road was decommissioned and graded out to allow flows to continue onto the downstream floodplain surface. Figure 6 shows before and after 3-D aerial imagery of the road area, and construction drawings in Attachment 2 show final contours. All excess soil excavated was disposed of in the two fill areas shown in Attachment 2. The fill areas were graded to mimic natural topography in the area to the extent practicable, covered in topsoil, and seeded as described below.

Seeding

After earthwork was completed, the Munz Canyon floodplain was hydroseeded with the alluvial floodplain seed mix shown in Table 2. Site preparation activities in seeding areas included mechanical tilling. A total of approximately 52 acres was seeded with the alluvial floodplain seed mix. The seed mix differs slightly from that presented in the Development Plan, primarily due to availability. The seed mix remains an appropriate representation of local alluvial floodplain flora despite the changes.

Additionally, the portion of Frake's Canyon within the limit of grade and a portion of Area F used for topsoil salvage and stockpile was seeded with an erosion control mix shown in Table 3, as required by erosion control Best Management Practices. A total of approximately 6.5 acres was seeded with the native erosion control seed mix. Frake's Canyon will be seeded with the alluvial floodplain seed mix upon implementation of the Area F Development Plan in a future phase.

Table 2. Alluvial Floodplain Seed Mix

Scientific Name	Species Name	Application Rate (PLS Lb./Acre)	
		Development Plan	As-built
Artemisia dracunculus	wild tarragon	1.00	0.10
Artemisia tridentata ssp. parishii	Parish's sagebrush	1.00	0.25
Bromus ciliatus	fringed brome	2.00	2.00
Elymus condensatus	giant wild rye	2.00	Unavailable
Elymus elymoides	bottlebrush squirreltail	2.00	2.00
Elymus trachycaulus	slender wheatgrass	2.00	2.00
Eriodictyon crassifolium	thick leaf yerba santa	3.00	0.50
Eriogonum fasciculatum	California buckwheat	2.00	1.00
Festuca microstachys	small fescue	4.00	4.00
Lepidospartum squamatum	scale broom	N/A	1.00
Lupinus truncatus	collared annual lupine	3.00	3.00
Hordeum brachyantherum	meadow barley	4.00	4.00
Melica imperfecta	smallflower melic	2.00	2.00
Muhlenbergia rigens	deergrass	2.00	0.50
Poa secunda	pine bluegrass	4.00	4.00
Salvia apiana	white sage	1.00	0.50
Salvia columbariae	chia sage	1.00	1.00
Stipa pulchra	purple needlegrass	4.00	4.00
	TOTAL	**40.00**	**31.85**

Table 3. Native Erosion Control Seed Mix

Scientific Name	Species Name	Application Rate (bulk Lb./Acre)
Bromus carinatus	California brome	20.00
Festuca microstachys	small fescue	8.00
Trifolium ciliolatum	tree clover	4.00
	TOTAL	**32.00**

Fencing, Gates, and Signage

Approximately 6,730 linear feet (LF) of wildlife-friendly four-wire cattle exclusion fence was installed around the Area E cattle exclusion area (Attachment 2). One 16-foot tube gate was installed in the cattle exclusion fencing, and the existing gate at the main site entrance was left in place. "No Trespassing" signs have been placed at all points of ingress to the property.

Summary

As we have reached completion of the restoration activities in Elizabeth Lake Area E of the Petersen Ranch Mitigation Bank, and have demonstrated that the constructed habitats are substantially consistent with the Development Plan, on behalf of the Bank Sponsor we respectfully request release of the Area E Construction Security and the 2nd credit release for all Area E credits.

If you have any questions regarding this submittal, please do not hesitate to contact me at 415-524-7238 or by email at bello@wra-ca.com.

Sincerely,

Nate Bello, WRA

Copy to: Sarvy Mahdavi, EPA, Region 9, Madhavi.sarvy@epa.gov
Warren Wong, CDFW, Region 5, David.Lawhead@wildlife.ca.gov
Jan Zimmerman, RWQCB, Region 6, Jan.Zimmerman@waterboards.ca.gov

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FIGURES

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Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI

ATTACHMENT 1: PRE- AND POST-CONSTRUCTION PHOTOS

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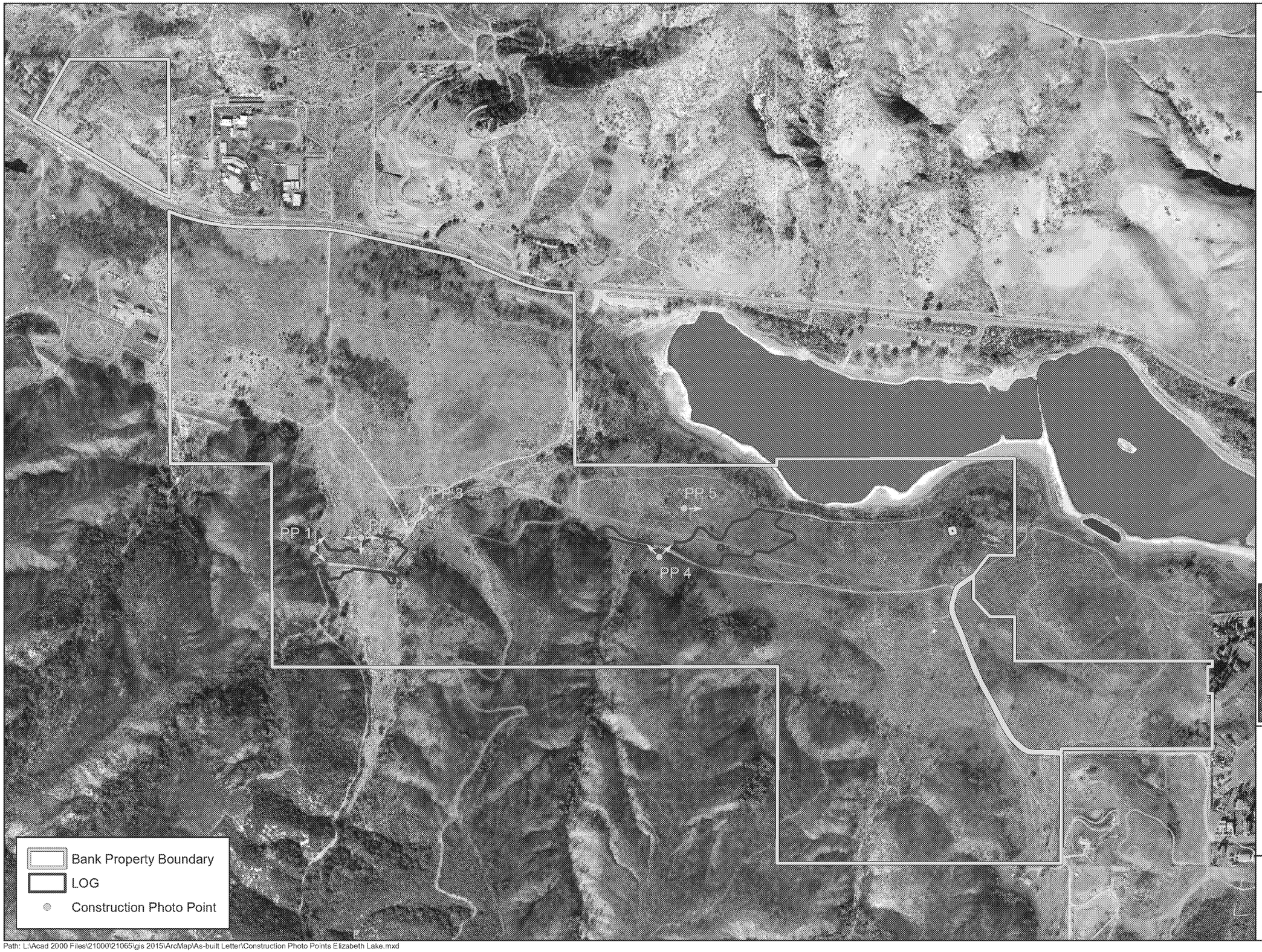
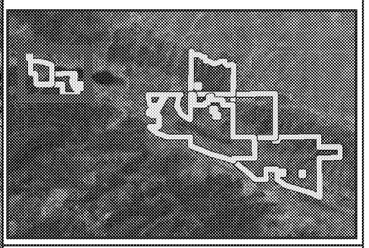


wra
ENVIRONMENTAL CONSULTANTS

Petersen Ranch Mitigation Bank

Los Angeles County, California

Construction Photo Points Map

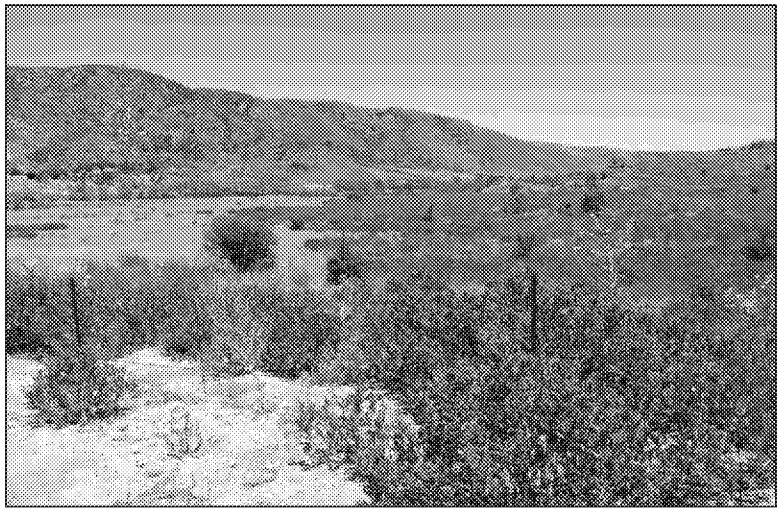


N
W E
S

0 590 1,180
Feet

Map Date: July 2015
Map By: Chris Zumwalt
Base Source: ESRI Streaming 5/8/2010

Path: L:\Acad 2000 Files\21000\21065\gis 2015\ArcMap\As-built Letter\Construction Photo Points Elizabeth Lake.mxd

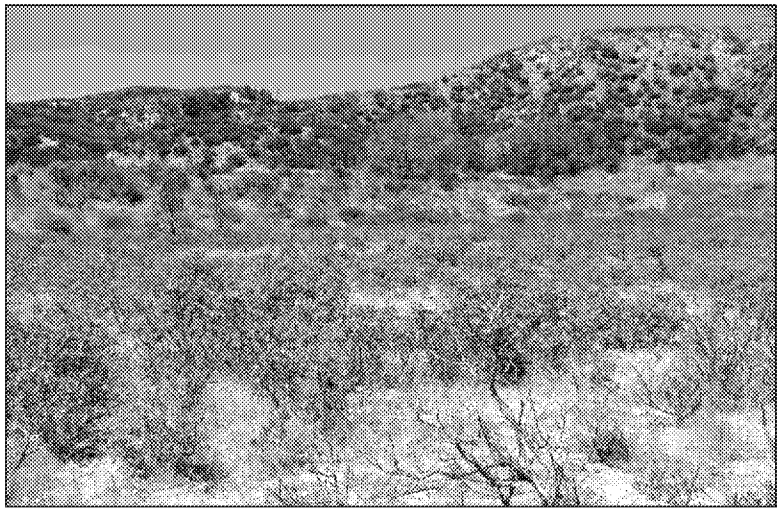


CPP-1 looking northeast on July 18, 2016

CPP-1 looking northeast on November 16, 2016

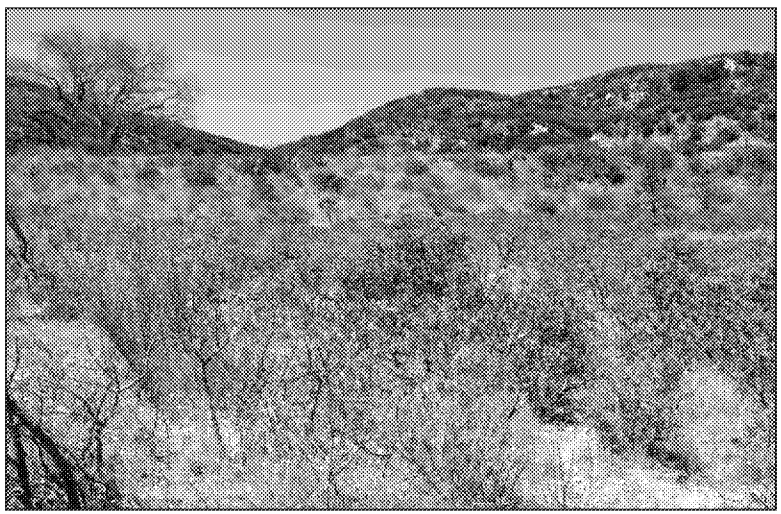
CPP-1 looking southeast on July 18, 2016

CPP-1 looking southeast on November 16, 2016



CPP-2 looking west on July 19, 2016

CPP-2 looking west on November 16, 2016



CPP-2 looking south on July 19, 2016

CPP-2 looking south on November 16, 2016

CPP-2 looking east on July 18, 2016

CPP-2, looking east on November 16, 2016

CPP-3 looking northwest on July 18, 2016

CPP-3 looking northwest on November 16, 2016

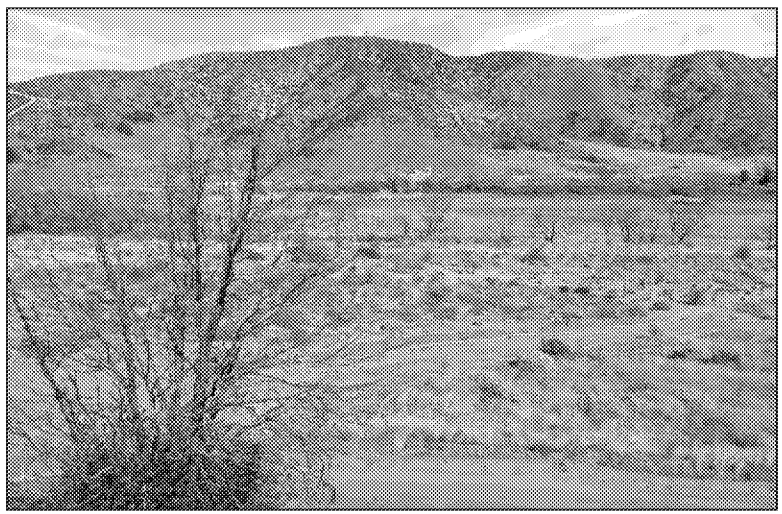
CPP-3 looking southwest on July 18, 2016

CPP-3 looking southwest on November 16, 2016

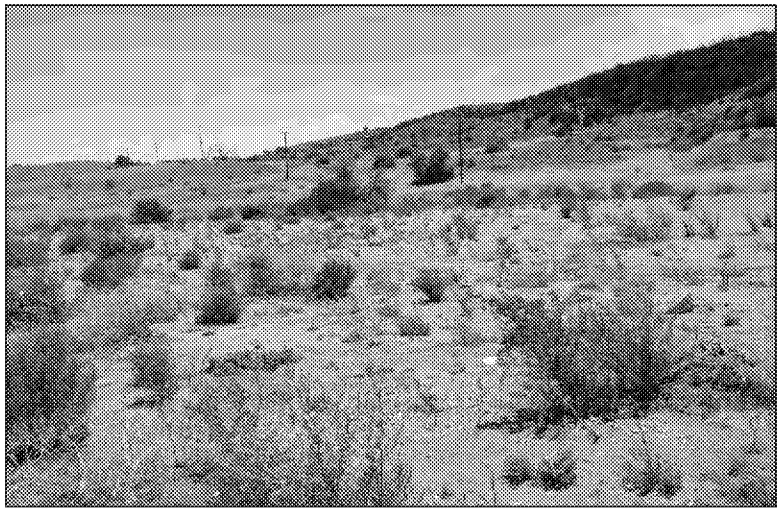
CPP-4 looking northwest on July 19, 2016

CPP-4 looking northwest on November 16, 2016

CPP-4 looking northeast on July 19, 2016



CPP-4 looking northeast on November 16, 2016



CPP-5 looking east on July 26, 2016

CPP-5 looking east on November 16, 2016

ATTACHMENT 2: CONSTRUCTION DRAWINGS

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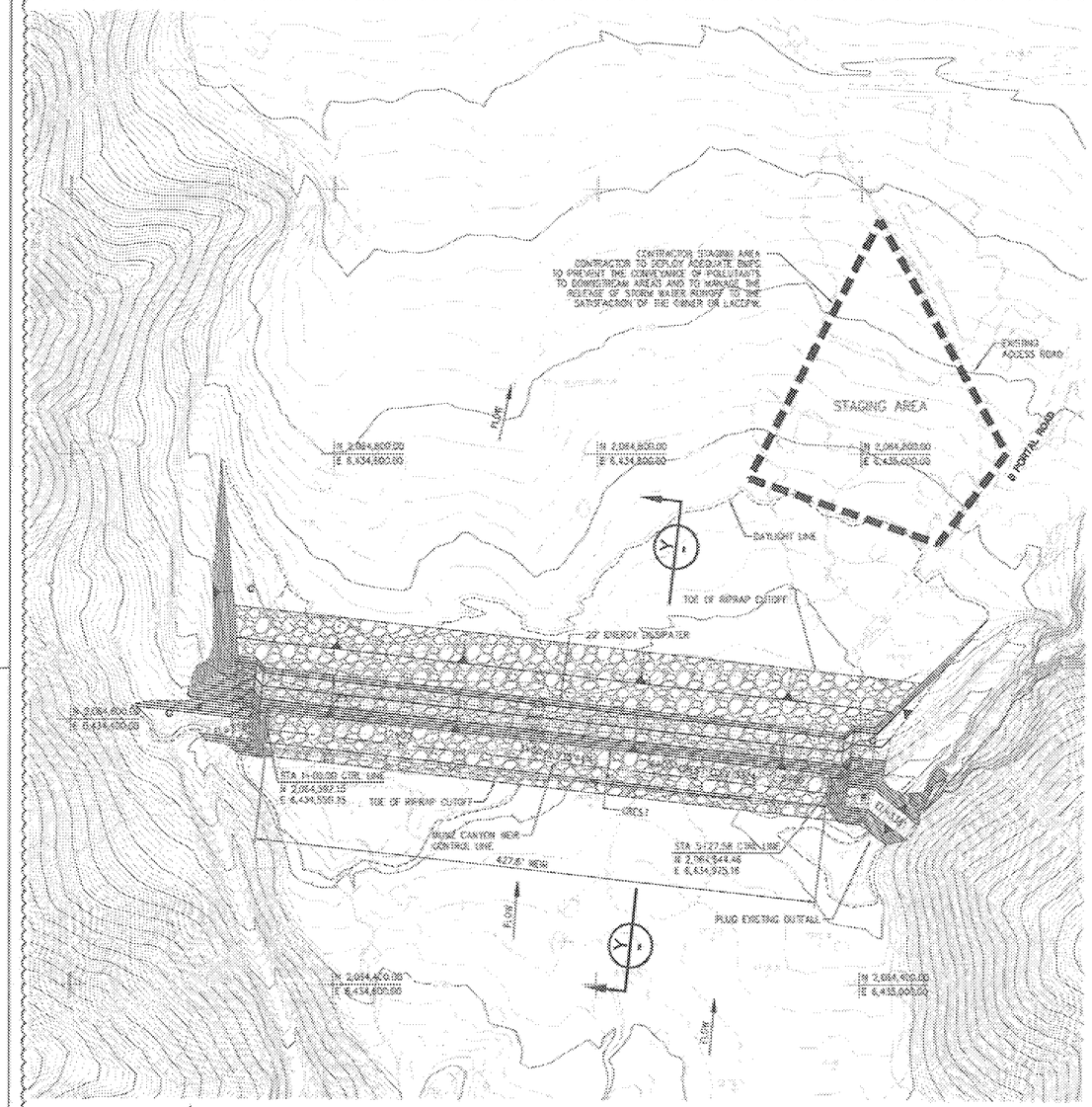
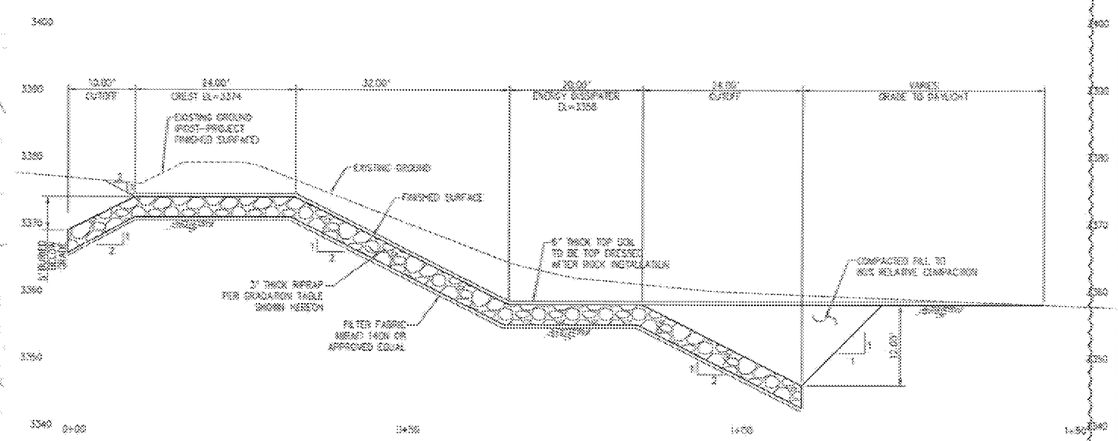
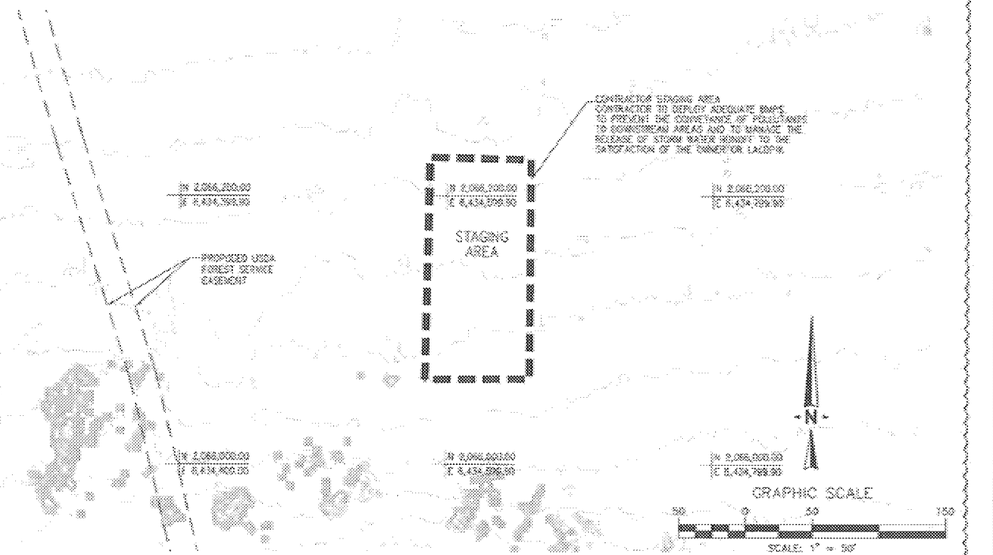


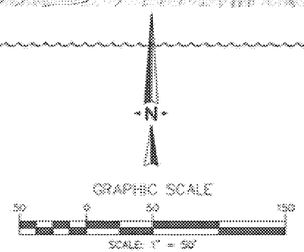
MUNZ CANYON PLAN



SECTION Y-Y



CONTRACTOR STAGING AREA



LEGEND

- 3487 PROPOSED CONTOUR
- EXISTING CONTOUR
- DAYLIGHT LINE
- CUT-FILL TRANSITION LINE
- MITIGATION BANK BOUNDARY
- PROPERTY LINE
- EASEMENT LINE
- TOP OF SLOPE
- SLOPE RATIO PER PLAN
- TOE OF SLOPE
- EXISTING TREE
- EXISTING SEASONAL WETLAND
- EXISTING TREE & SHRUBS CANOPY

RIPRAP GRADATION TABLE		SIZE
PERCENT LIGHTER BY WEIGHT	LIMITS OF STONE WEIGHT, LBS	LIMITS OF STONE DIAMETER, INCHES
50 – 100	900 – 2250	26.2 – 35.6
15 – 50	450 – 667	20.8 – 23.7
0 – 15	141 – 333	14.1 – 18.6

RECOMMENDED LAND DEVELOPMENT DIVISION

BY _____

T.G. 4102

AS-BUILT

PETERSEN RANCH MITIGATION BANK
GRADING PERMIT PLAN SET
MUNZ CANYON PLAN

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

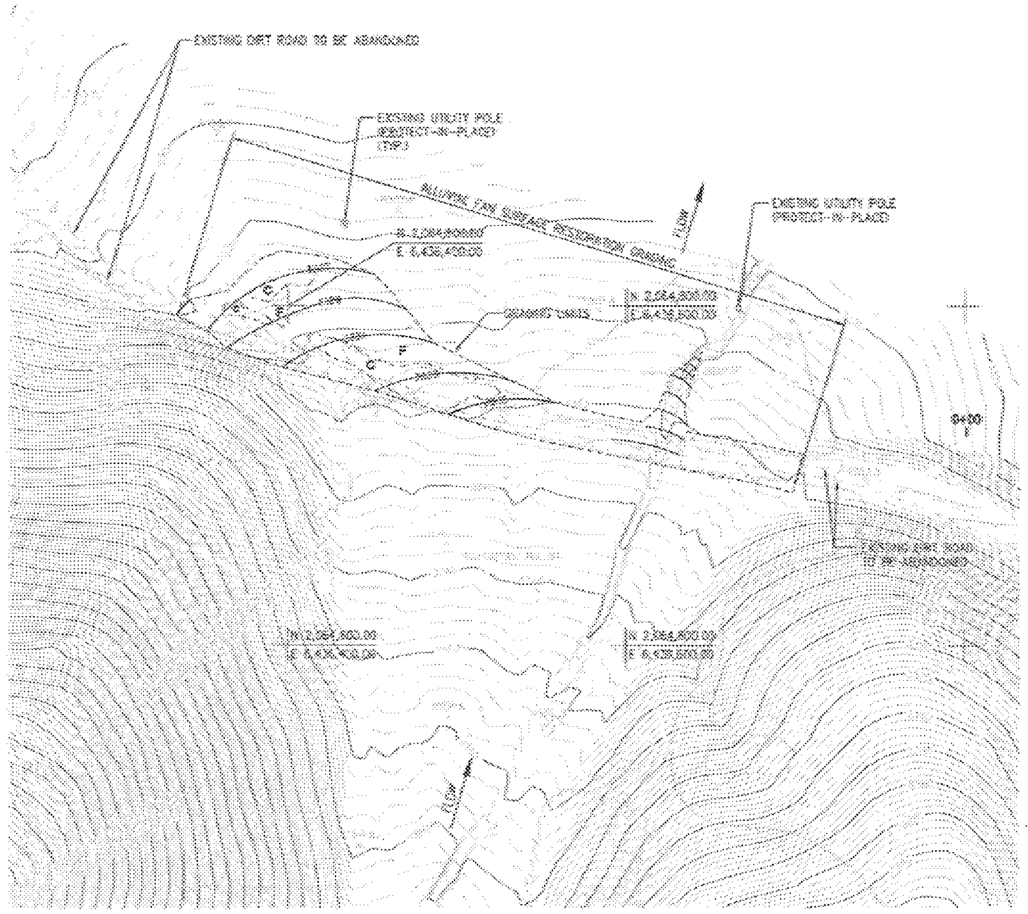
NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	CREST ELEV LOWERED TO 3374FT, STAGING AREA ADDED			
2	AS-BUILT			

VA Consulting, Inc.
ENGINEERS PLANNERS SURVEYORS
CONSULTING
48 DISCOVERY, STE 250 (949) 474-1400 TEL
IRVINE, CA 92618 (949) 281-8483 FAX

PROJECT ENGINEER _____ DATE 11/16/15

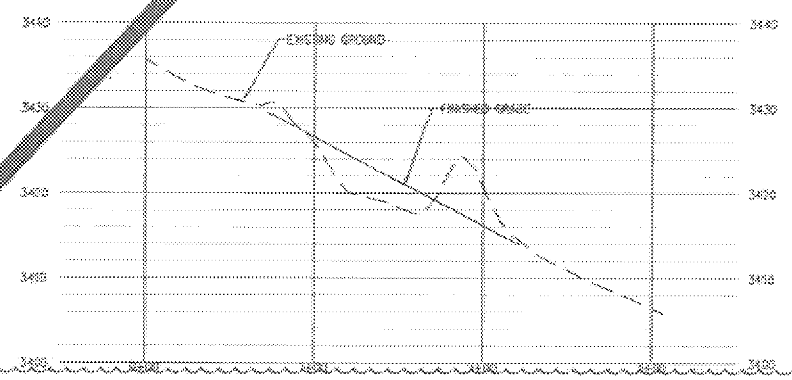
TR/PM/CUP/RPP NO. XXXXX

SHEET 12 OF 31



RESTORATION AREA 2

RESTORATION AREA 3



SECTION Z-Z

GRAPHIC SCALE

SCALE: 1" = 50'

T.G. 4102

LEGEND

Symbol	Description
——3487——	PROPOSED CONTOUR
3487	EXISTING CONTOUR
— — — —	DAYLIGHT LINE
— C/F —	CUT-FILL TRANSITION LINE
————	MITIGATION BANK BOUNDARY
— — —	PROPERTY LINE
— — — —	EASEMENT LINE
⊕	EXISTING UTILITY POLES
	TOP OF SLOPE
	SLOPE RATIO PER PLAN
	TOE OF SLOPE
⊕	EXISTING TREE
	EXISTING SEASONAL WETLAND
	EXISTING TREE & SHRUB CANOPY

GRAPHIC SCALE

SCALE: 1" = 50'

AS-BUILT

REVIEWED LAND DEVELOPMENT DIVISION

BY ______________________

ROAD AND DRAINAGE SECTION

NO.	REVISIONS	REVIEWED BY	APPROVED BY	DATE
1	UPDATED UTILITY POLES LOCATIONS, REVISED FILL AREA GRADING			
2	AS-BUILT			

PETERSEN RANCH MITIGATION BANK
GRADING PERMIT PLAN SET
RESTORATION AREA 2 & 3

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

VA Consulting, Inc.
ENGINEERS PLANNERS SURVEYORS

46 DISCOVERY, STE 250 IRVINE, CA 92618
(949) 474-1400 TEL
(949) 261-8482 FAX

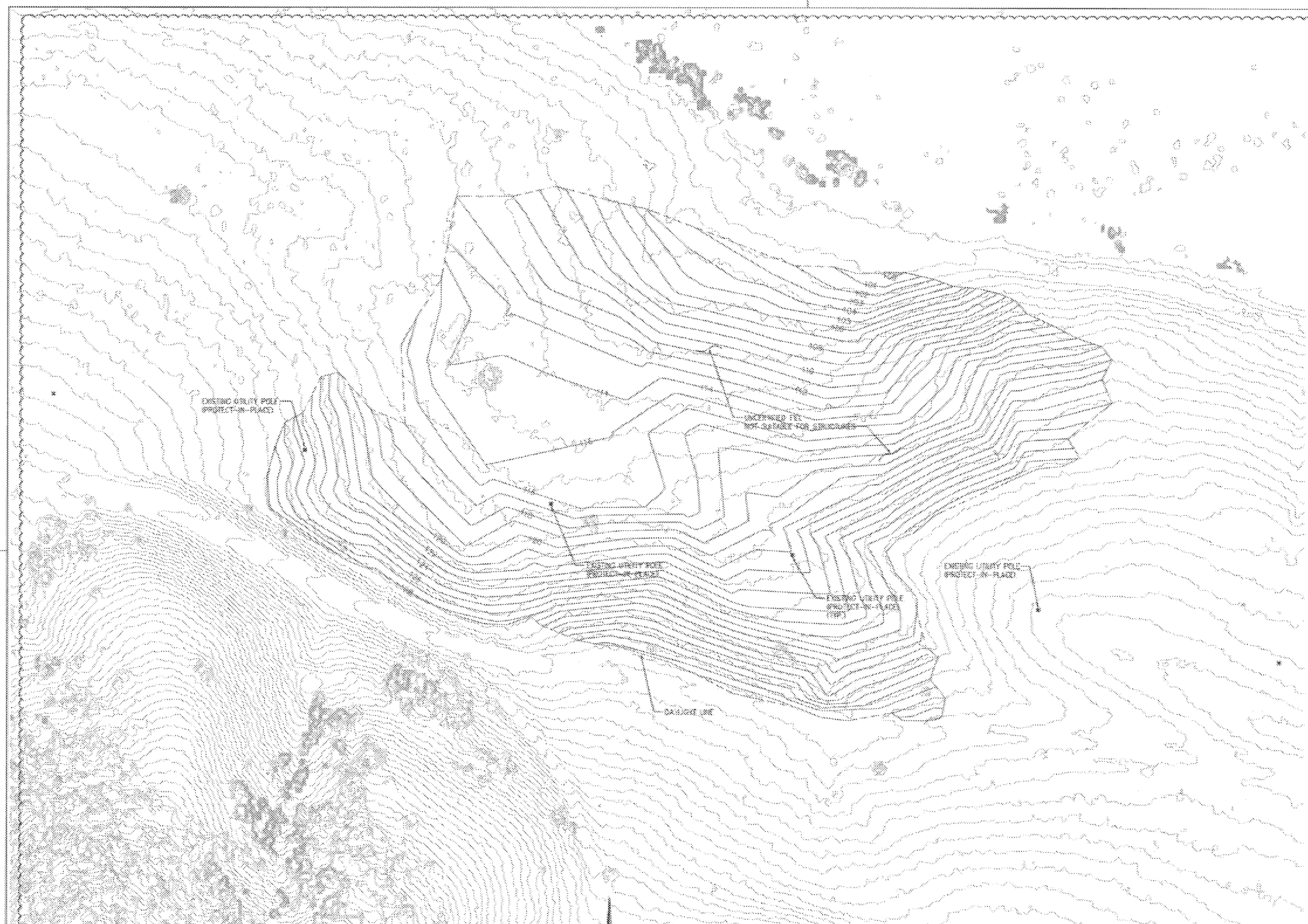
No. C55260 Exp. 06/30/16

11/11/15

PROJECT ENGINEER — DATE

TR/PM/CUP/RD NO. XXXXX

SHEET 13 OF 31



LEGEND

Symbol	Description
——3487——	PROPOSED CONTOUR
	EXISTING CONTOUR
	DAYLIGHT LINE
	CUT-FILL TRANSITION LINE
	MITIGATION BANK BOUNDARY
	PROPERTY LINE
	EASEMENT LINE
	EXISTING UTILITY POLES
	TOP OF SLOPE
	SLOPE RATIO PER PLAN
	TOE OF SLOPE
	EXISTING TREE
	EXISTING SEASONAL WETLAND
	EXISTING TREE CANOPY
	EXISTING SHRUB CANOPY

N

GRAPHIC SCALE

50 0 50 150

SCALE: 1" = 60'

REVIEWED LAND DEVELOPMENT DIVISION

BY ______________ ROAD AND GRADING SECTION

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
2	AS-BUILT			

AS-BUILT (2)

T.G. 4102

PETERSEN RANCH MITIGATION BANK
GRADING PERMIT PLAN SET

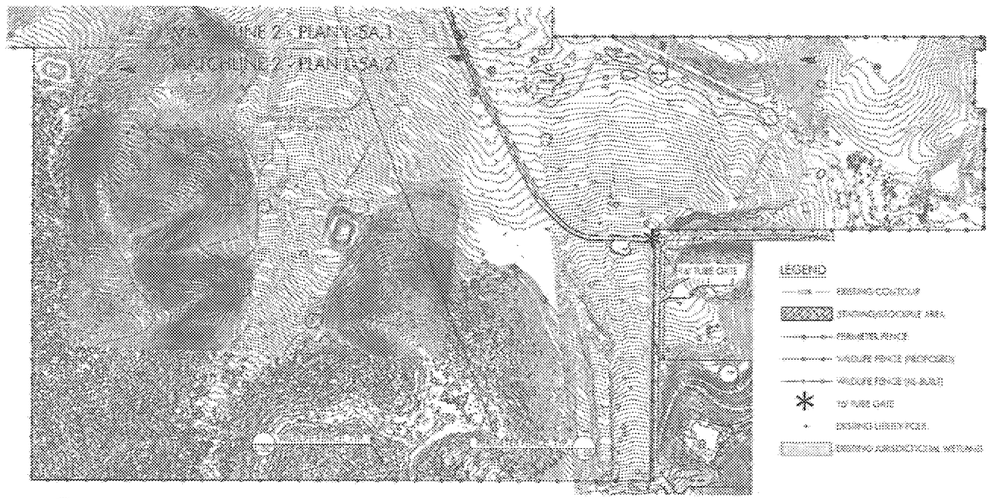
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

VA Consulting, Inc.
ENGINEERS PLANNERS SURVEYORS
46 DISCOVERY, STE. 200 IRVINE, CA 92618
(949) 474-1400 TEL (949) 261-8482 FAX

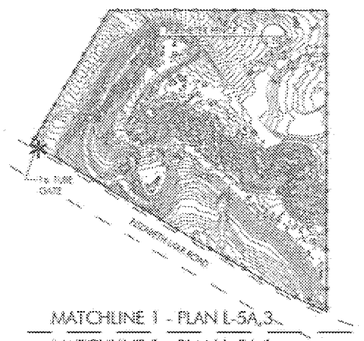
11/11/15
DATE

TR/PM/CUP/RD NO. XXXXX

1 ELIZABETH LAKE FENCING PLAN VIEW
1" = 200'



2 ELIZABETH LAKE FENCING PLAN VIEW - SOUTHEAST CORNER
1" = 200'



3 ELIZABETH LAKE FENCING PLAN VIEW - NORTHWEST PARCEL
1" = 200'

NOTES:

1. CONTRACTOR SHALL CLEAR VEGETATION ALONG FENCE ALIGNMENT. COORDINATE WITH PROJECT BIOLOGIST FOR NEST SURVEYS IF NECESSARY.

NO.	REVISIONS	REVISED BY	DATE

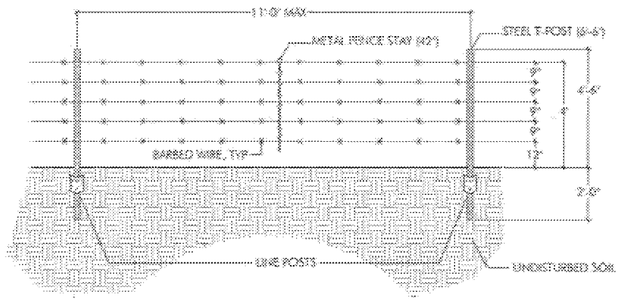
PETERSEN RANCH MITIGATION BANK
AREA E AS-BUILT SET
L-5A FENCE PLAN

LICENSED LANDSCAPE ARCHITECT — STATE OF CALIFORNIA

wra
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS AND PLANNERS
2169-G East Francisco Blvd.
San Rafael, CA 94901

PROJECT #231065 | DRAWN BY: MAS | CHECKED BY: RBB | SHEET: L-5 | DATE: NOV 4, 2016

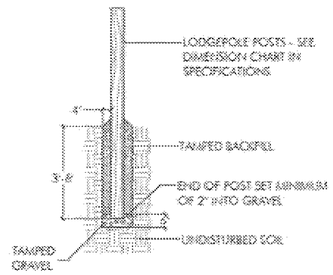
PERIMETER FENCE DETAILS



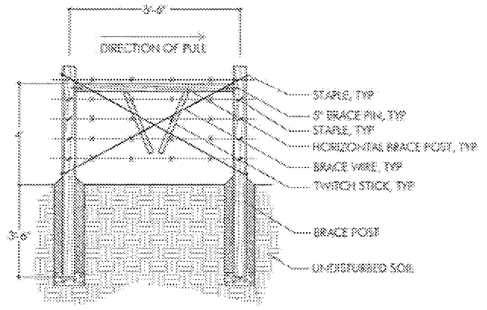
NOTES:

1. THE CONTRACTOR SHALL PLACE "NO TRESPASSING" SIGNS AT 600-FOOT INTERVALS.

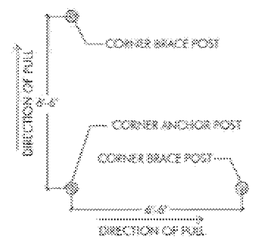
1 FENCE LINE SECTION
NOT TO SCALE



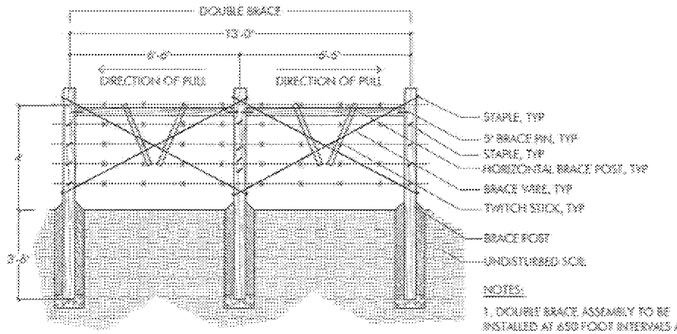
2 BRACE POST INSTALLATION
NOT TO SCALE



3 CORNER BRACE SECTION
NOT TO SCALE



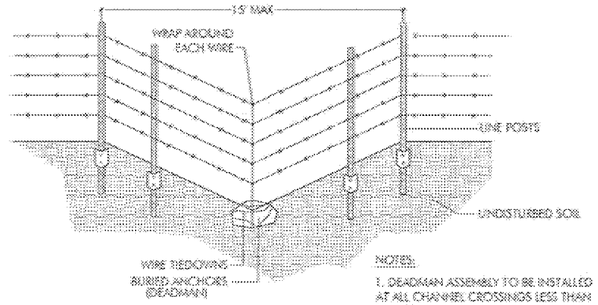
4 CORNER BRACE PLAN VIEW
NOT TO SCALE



NOTES:

1. DOUBLE BRACE ASSEMBLY TO BE INSTALLED AT 650 FOOT INTERVALS AND AT ALL TOPOGRAPHIC CHANGES OF 15 PERCENT OR MORE.

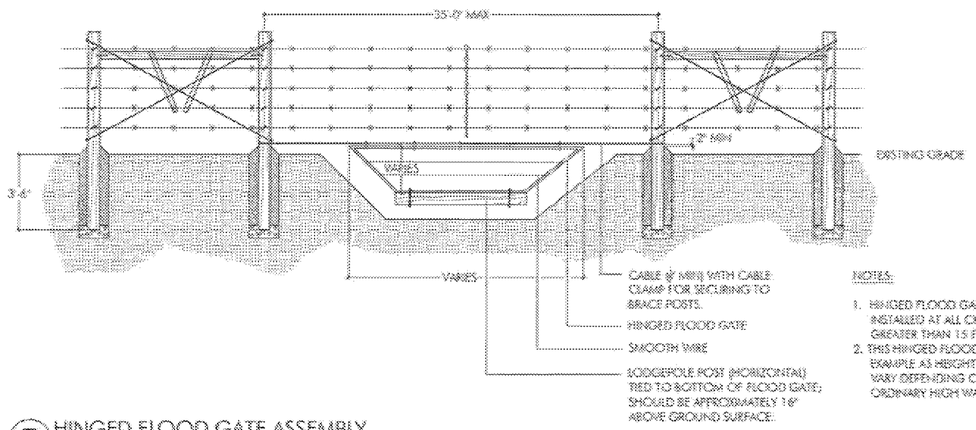
5 DOUBLE LINE BRACE SECTION
NOT TO SCALE



NOTES:

1. DEADMAN ASSEMBLY TO BE INSTALLED AT ALL CHANNEL CROSSINGS LESS THAN 15 FEET WIDE

6 DEADMAN SECTION
SCALE: NOT 0



NOTES:

1. HINGED FLOOD GATE ASSEMBLY TO BE INSTALLED AT ALL CHANNEL CROSSINGS GREATER THAN 15 FEET WIDE
2. THIS HINGED FLOOD GATE IS GIVEN AS AN EXAMPLE AS HEIGHT AND WIDTH WILL VARY DEPENDING ON CHANNEL ORDINARY HIGH WATER MARK.

7 HINGED FLOOD GATE ASSEMBLY
NOT TO SCALE

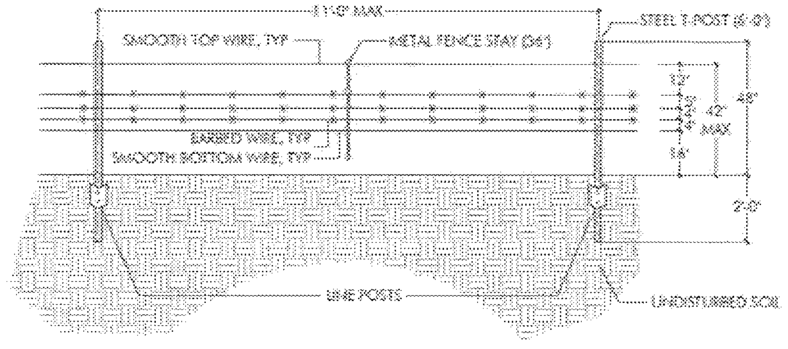
NO.	REVISIONS	REVISED BY	DATE

PETERSEN RANCH MITIGATION BANK
AREA E AS-BUILT SET
L-5B PERIMETER FENCE DETAILS

ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS AND PLANNERS
2169-G East Francisco Blvd.
San Rafael, CA 94901

PROJECT #210615 | DRAWN BY: MAS | CHECKED BY: KBB | SHEET: 7 OF 12 | DATE: NOV 6, 2014

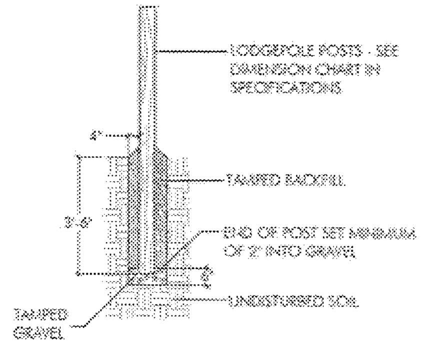
WILDLIFE FENCE DETAILS



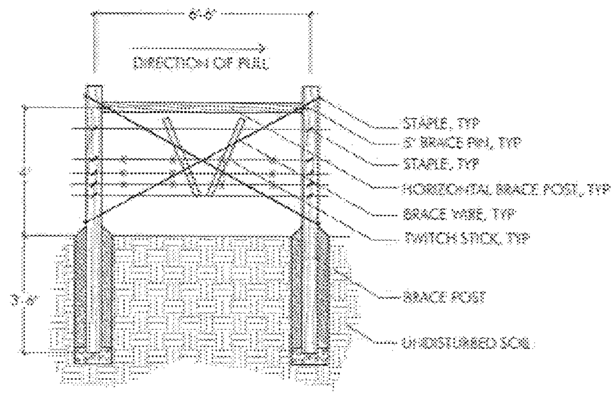
NOTES:

1. WILDLIFE VISIBILITY MARKERS: EVERY 50 FEET THE CONTRACTOR SHALL IMPLEMENT DURABLE VINYL MARKERS TO INCREASE WIRE VISIBILITY.

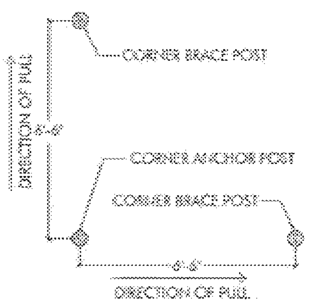
(1) FENCE LINE SECTION
NOT TO SCALE



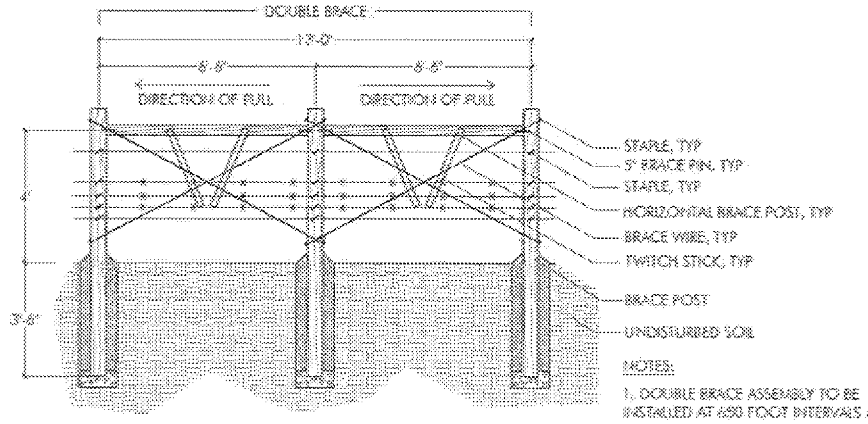
(2) BRACE POST INSTALLATION
NOT TO SCALE



(3) CORNER BRACE SECTION
NOT TO SCALE



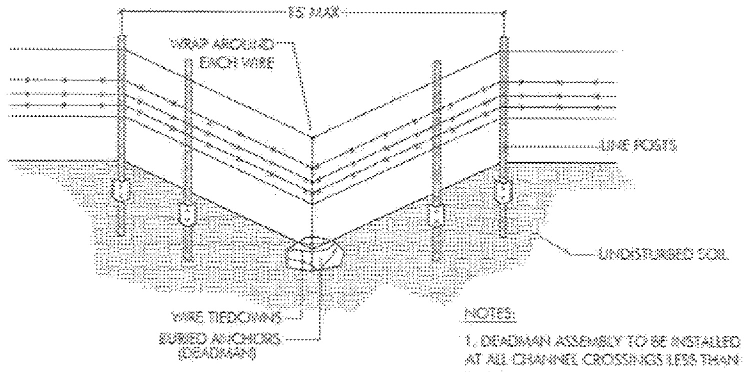
(4) CORNER BRACE PLAN VIEW
NOT TO SCALE



NOTES:

1. DOUBLE BRACE ASSEMBLY TO BE INSTALLED AT 650 FOOT INTERVALS AND AT ALL TOPOGRAPHIC CHANGES OF 15 PERCENT OR MORE.

(5) DOUBLE LINE BRACE SECTION
NOT TO SCALE



NOTES:

1. DEADMAN ASSEMBLY TO BE INSTALLED AT ALL CHANNEL CROSSINGS LESS THAN 15 FEET WIDE

(6) DEADMAN SECTION
NOT TO SCALE

NO.	REVISIONS	REVISED BY	DATE

PETERSEN RANCH MITIGATION BANK
AREA E AS-BUILT SET
L-5C INTERIOR FENCE DETAILS

wra
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS AND PLANNERS
2169-G East Francisco Blvd.
San Rafael, CA 94901

PROJECT #21065 | DRAWN BY: MAS | CHECKED BY: RBB | SHEET: 8 OF 17 | DATE: NOV 4, 2016

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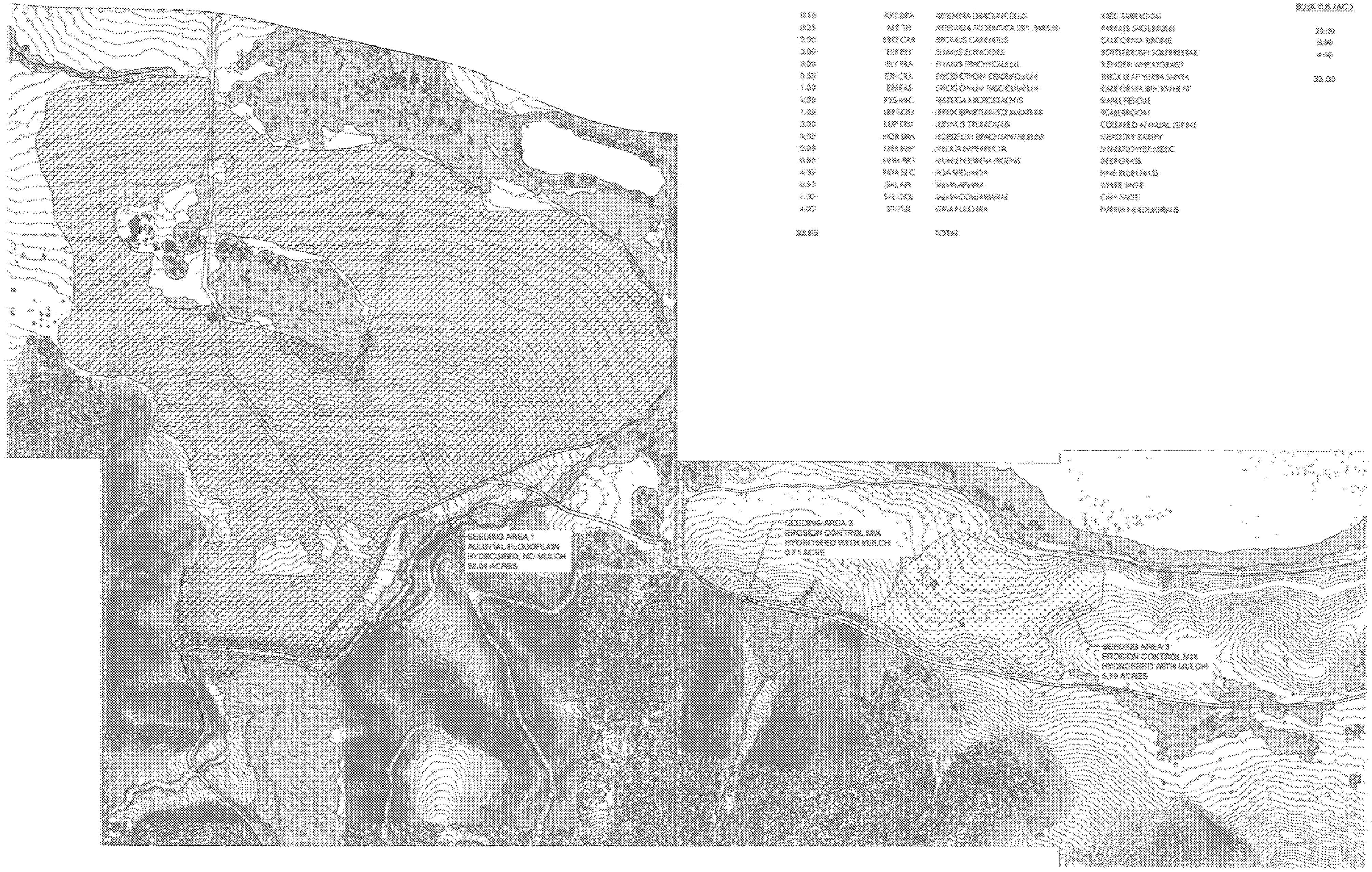
ALLUVIAL FLOODPLAIN AS-BUILT SEED MIX

APPLICATION RATE PURE LIVE SEED (LB./AC.)	SYMBOL	BOTANICAL NAME	COMMON NAME
0.10	ART DRA	ARTEMISIA DRACUNCULUS	WILD TARRAGON
0.25	ART TRI	ARTEMISIA TRIDENTATA SSP. PARISHII	PARISH'S SAGEBRUSH
2.00	BRO CAR	BROMUS CARINATUS	CALIFORNIA BROME
3.00	ELY ELY	ELYMUS ELYMOIDES	BOTTLEBRUSH SQUIRRELTAIL
3.00	ELY TRA	ELYMUS TRACHYCAULUS	SLENDER WHEATGRASS
0.50	ERI CRA	ERIODICTYON CRASSIFOLIUM	THICK LEAF YERBA SANTA
1.00	ERI FAS	ERIOGONUM FASCICULATUM	CALIFORNIA BUCKWHEAT
4.00	FES MIC	FESTUCA MICROSTACHYS	SMALL FESCUE
1.00	LEP SCO	LEPIDOSPARTUM SQUAMATUM	SCALEBROOM
3.00	LUP TRU	LUPINUS TRUNCATUS	COLLARED ANNUAL LUPINE
4.00	HOR BRA	HORDEUM BRACHYANTHERUM	MEADOW BARLEY
2.00	MEL IMP	MELICA IMPERFECTA	SMALLFLOWER MELIC
0.50	MUH RIG	MUHLENBERGIA RIGENS	DEERGRASS
4.00	POA SEC	POA SECUNDA	PINE BLUEGRASS
0.50	SAL API	SALVIA APIANA	WHITE SAGE
1.00	SAL COL	SALVIA COLUMBARIAE	CHIA SAGE
4.00	STI PUL	STIPA PULCHRA	PURPLE NEEDLEGRASS
33.85		TOTAL	

NATIVE EROSION CONTROL MIX
(OFF-THE-SHELF SEED MIX BY S&S SEEDS)

APPLICATION RATE BULK (LB./AC.)	SYMBOL	BOTANICAL NAME	COMMON NAME
20.00	BRO CAR	BROMUS CARINATUS	CALIFORNIA BROME
8.00	FES MIC	FESTUCA MICROSTACHYS	SMALL FESCUE
4.00	TRI CI	TRIFOLIUM CILIOLATUM	TREE CLOVER
32.00		TOTAL	



SEEDING NOTES:

1. SEED SHALL BE APPLIED ONLY AFTER ALL GRADING AND CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
2. SEEDED AREAS SHALL BE PREPARED USING A LIGHTWEIGHT HARROW OR CHAIN-LINK FENCE DRAG IMMEDIATELY PRIOR TO SEEDING WITHOUT DISTURBING EXISTING NATIVE VEGETATION TO THE EXTENT PRACTICABLE.
3. IN AREAS WITH EXISTING VEGETATION GREATER THAN 1 FOOT TALL, A HAND HELD HOSE SHALL BE USED FOR HYDROSEEDING TO MINIMIZE OVERSPRAY ON EXISTING VEGETATION.
4. NO MULCH IS TO BE APPLIED IN SEEDING AREAS #1 AND #2.

LEGEND

EXISTING CONTOUR

ALLUVIAL FLOODPLAIN SEEDING AREA (AS BUILT)

EROSION CONTROL SEEDING AREA (AS BUILT)

EXISTING UTILITY POLE

EXISTING JURISDICTIONAL WETLANDS

200 0 200 400
SCALE IN FEET

N

1 ELIZABETH LAKE SEEDING PLAN
1" = 200'

NO.	REVISIONS	REVISED BY	DATE

PETERSEN RANCH MITIGATION BANK
AREA E AS-BUILT SET
L-4 SEEDING PLAN

LICENSED LANDSCAPE ARCHITECT
STATE OF CALIFORNIA

wra
ENVIRONMENTAL CONSULTANTS
LANDSCAPE ARCHITECTS AND PLANNERS
2169-G East Francisco Blvd.
San Rafael, CA 94901

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